COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *durations* of effective sunshine whence the duration relative to possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental records of percentages of durations of sunshine are almost always larger than the observers' personal estimates of percentages of area of clear sky; the average excess for September, 1896, is 7 per cent for photographic and 8 per cent for thermometric records.

The details are shown in the following table, in which the stations are arranged according to the greatest possible duration of sunshine, and not according to the *observed* duration as heretofore.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—The dates on which reports of thunderstorms for the whole country were most numerous were: 3d, 208; 5th, 136; 12th, 147; 17th, 138; 18th, 150; 19th, 247.

Thunderstorm reports were most numerous in: Florida, 111; Illinois, 157; Massachusetts, 102; Missouri, 238; North Carolina, 127; Ohio, 109; Pennsylvania, 105.

Thunderstorm were most frequent in: Florida, 26 days; Illinois, 20; Missouri, 25; North Carolina and Texas, 21.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 17th to the 25th, inclusive. On the remaining twenty-one days of this month 35 reports were received, or an average of about 1.5 per day. The date on which the number of reports especially exceeded this average were: 4th, 7; 18th, 9; 30th, 10.

Auroras were reported by a large percentage of observers, in Minnesota and New Hampshire, 22; North Dakota, 26 per cent.

Auroras were reported most frequently in: Minnesota, 11 days; North Dakota, 6.

CANADIAN REPORTS.

Thunderstorms were reported as follows: Yarmouth, 17th, 19th, 20th; Montreal, 17th; Toronto, 27th; Port Stanley, 5th; Saugeen, 6th; Port Arthur, 9th.

Auroras were reported as follows: Father Point, 12th, 15th; Quebec, 3d, 4th, 15th; Toronto, 19th; Port Arthur, 13th, 16th; Winnipeg, 3d, 13th, 15th, 22d, 30th; Minnedosa, 1st, 2d, 6th; Medicine Hat, 30th; Prince Albert, 2d; Edmonton, 3d, 6th.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers for the current month are given in Table VIII, from which it appears that the only case in which a river exceeded danger line was that of the James River, at Lynchburg, Va., which had risen 0.2 feet above danger line on the 30th, in consequence of the heavy rains that had fallen the day before in connection with the hurricane in that region. These rains were heaviest in the mountainous parts of western Virginia, Maryland, and central Pennsylvania. In general, the rivers maintained a very uniform stage of water; the greatest ranges during the month were: 9.4 at Chattanooga, and 8.4 at Kansas City and Cairo.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 75.8°, or 0.7° above normal; the highest was 104°, at Ashville on the 18th, and the lowest, 35°, at Healing Springs and Pineapple on the 30th. The average precipitation was 1.76, or 0.98 below normal; the greatest monthly amount, 3.95, occurred at Rock Mills; no rain fell at Pineapple. The drought which began during the second decade of July, over the central and northern portions of the State, and which was practically unbroken during August, continued with very little exception until the last decade of September, when it was partially broken by scattered, and in some places heavy, showers; but in some portions, notably in Wilcox and adjoining counties, the drought continued throughout the month. The effect of the weather on growing crops was a continuation of that reported for August; all late summer crops were either prematurely forced or entirely checked; in both cases there resulted inferior yields. Cotton was nearly all gathered in by the end of the month, closing a phenomenally early cotton season in this State.

Arizona.—Report not received.

Arkansas.—The mean temperature was 73.3°, or 0.4° above normal; the highest was 106°, at Hot Springs and Prescott on the 17th, and the lowest, 35°, at Corning on the 22d, La Crosse, Keesees Ferry, and Brinkley on the 29th, and Witts Springs on the 27th and 28th. The average precipitation was 3.25, or 0.19 above normal; the greatest monthly amount, 5.07, occurred at Moore, and the least, 0.69, at Gaines Landing.

California.—The mean temperature was 67.9°, or 1.9° below normal; the highest was 118°, at Volcano Springs on the 15th, and the lowest, 18°, at Bodie on the 19th. The average precipitation was 0.37, or 0.16 above normal; the greatest monthly amount, 2.29, occurred at Laporte, while no rain fell at numerous stations.

Colorado.—The mean temperature was 57.4°, or about 1.0° below normal; the highest was 104°, at Lamar on the 1st, and the lowest, 9.0° at Breckenridge on the 28th. The average precipitation was 2.04, or 1.13 above normal; the greatest monthly amount, 5.14, occurred at T. S. Ranch, and the least, 0.15, at Lajara.

Florida.—The mean temperature was 79.5°, or 4.2° above normal; the highest was 100°, at McClenny on the 13th, and the lowest, 48°, at Milton on the 30th. The average precipitation was 4.42, or 0.55 below normal; the greatest monthly amount, 11.12, occurred at Myers, and the least, 0.70, at McClenny. The climatic features of the month were generally abnormal, as indicated by excessive heat and deficiency in precipitation. The drought which began to be seriously felt as early as July still influences the conditions over the greater portion of the State, and its ill effects are evident in the rapidly maturing crops. Cotton opened before maturing, hastened by dry weather and constant sunshine. Though staple crops, such as corn, cotton, and potatoes have been injured, and a reduced production conceded, September has been an ideal month for harvesting. No generally excessive rains prevailed, and all cotton housed was in an excellent condition. A decided departure from these satisfactory conditions took place on the 29th, when a West India hurricane passed over portions of the State. Approaching the coast near Cedar Keys on the morning of the 29th, it pursued a north-northeasterly course through Levy, Lafayette, Alachua, Bradford, Suwannee, Columbia, Baker, and Nassau counties, leaving death and destruction in its wake. The center of the storm passed through portions of the above counties. The effect of the hurricane was felt over the entire northeast portions of the State. At least 50 lives were lost, and damage to the amount of $3,000,000 was the result. Continued dry weather has retarded the growth of plants, and has largely operated to delay sowing over the greater portion of the State. Citrus